

U.S. Patent Application No. 09/778,220

AMENDMENTIn the Claims

Please amend Claims 1 and 3-28 to read as shown below.

1. (Currently Amended) A method for supporting the efficient transfer of haggage from an inbound flight to connecting flights, comprising the steps of:
 - identifying an inbound flight to a software module operating on a server computer in a distributed computer network;
 - retrieving data concerning the haggage from databases logically connected to the distributed ~~computing system~~ computer network and providing the data to the software module at the server computer;
 - operating the software module at the server computer to calculate a plurality of costs of potential assignments for haggage transfer from the data and to select ~~[[an]] a most efficient solution of assignments~~ assignment from the plurality of costs of potential assignments;
 - operating the software module at the server computer to calculate a plurality of potential routes for completing the most efficient assignment ~~assignments~~ from the data and to select ~~[[an]] a most efficient route from the plurality of potential routes~~;
 - electronically distributing over a wireless network the ~~selected-most efficient solution of assignments~~ assignment and ~~selected-most efficient routes~~ route from the server to a plurality of clients ~~connected to~~ in communication with the distributed computer network; and
 - delivering haggage to a gate of one or more ~~outbound~~ connecting flights according to the ~~selected-most efficient assignments~~ assignment and most efficient routes ~~route~~.

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2. (Original) The method of claim 1, further comprising the step of notifying the software module operating on the server computer that tugs are available for delivering the baggage.
3. (Currently Amended) The method of claim 1, wherein the step of identifying an inbound flight comprises the steps of:
 - notifying a dispatch client of an inbound flight number for the inbound flight; and
 - transmitting the inbound flight number from the dispatch client to the software module operating on the server.
4. (Currently Amended) The method of claim 1, wherein the step of retrieving data from databases logically connected to the distributed computing environment comprises the steps of:
 - requesting flight data from a flight performance evaluation system;
 - if the flight data is not available in the flight performance evaluation system, requesting the flight data from an operations support system;
 - requesting passenger data and baggage data from a passenger information distribution system; and
 - if the passenger and baggage data is not available in the passenger information distribution system, requesting the passenger and baggage data from a reservation system.

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5. (Currently Amended) The method of claim 1, wherein the step of calculating the plurality of costs of potential assignments to select ~~[[an]]~~ the most efficient solution of assignments ~~assignment~~ comprises the steps of:

defining desired driver, baggage, and stop parameters for determining ~~a best~~ the most efficient assignment; and
creating ~~possible~~ the plurality of costs of potential assignments ~~assignment solutions from combinations of assignments for baggage transfer, and~~
~~calculating a cost for each assignment solution.~~

6. (Currently Amended) The method of claim ~~[[5]]~~1, wherein the step of calculating the plurality of costs of potential assignments to select ~~[[an]]~~ the most efficient solution of assignments ~~assignment~~ further comprises the steps of:

saving one of the plurality of costs of potential assignments ~~the solution~~ with the lowest cost as the best most efficient assignment solution; and
presenting the ~~best~~ most efficient assignment solution to the dispatch client.

7. (Currently Amended) The method of claim ~~[[5]]~~1, wherein the most efficient assignment solution of assignments comprises one or more assignments providing for the transfer of all connecting baggage from an inbound flight.

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8. (Currently Amended) The method of claim 5, wherein the step of creating the plurality of costs of potential assignments ~~possible assignment solutions~~ from combinations of assignments comprises the steps of:

- identifying all zones of an airport concourse to which baggage must be delivered;
- identifying the zone of the inbound flight as the starting zone,
- either adding zones to the starting zone to create an assignment or considering the starting zone a complete assignment; and
- creating additional assignments comprising either single zones or combinations of zones.

9. (Currently Amended) The method of claim 5, wherein the step of creating the plurality of costs of potential assignments ~~possible assignment solutions~~ from combinations of assignments further comprises the step of ~~eliminating one or more of the plurality of costs of potential assignments possible assignment solutions~~ that exceed driver, baggage or stop parameters.

10. (Currently Amended) The method of claim ~~[[5]]~~, wherein the cost for each of the plurality of costs of potential assignments ~~assignment solution~~ is defined by the calculation of:

$$(\text{number of drivers}) * (\text{driver cost}) + \max(\text{num. bags} - \text{min}(\text{num. bags}), 0) * (\text{balance cost}) + (\text{num. of same side zones not kept together}) * (\text{pair cost}) + \text{SIGMA}(\text{assignments}((\max(\text{num. of bags, target num. of bags}) - (\text{target num. of bags})^2 * (\text{bag cost}) + ((\text{target num. of bags} \min(\text{num. bags, target num. of bags})) * (\text{bag cost}) + (\max(\text{target num. of stops, num. of stops}) - \text{target num. of stops}) * (\text{stop cost})), 2$$

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11. (Currently Amended) The method of claim 1, wherein the step of calculating the plurality of potential routes for completing the assignments comprises the steps of:
creating the plurality of potential routes ~~possible routing solutions~~ from combinations of routes; and
calculating the total distances between each gate of each connecting flight for each of the ~~combinations~~ plurality of potential ~~[[of]]~~ routes.

12. (Currently Amended) The method of claim ~~[[11]]~~ 1, wherein the step of calculating the plurality of potential routes for completing the assignments further comprises the steps of:
~~saving the routing solution from the combination~~ the plurality of potential ~~[[of]]~~ routes with the shortest total distance as the best most efficient routing route solution; and
presenting the best most efficient routing route solution to the dispatch client.

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13. (Currently Amended) The method of claim 11, wherein the step of calculating ~~creating the plurality of potential routes from combinations of routes for completing the assignments~~ further comprises the steps of:

identifying close connecting flights ~~connections~~ departing shortly after the arrival of the inbound flight;

if there are close connecting flights ~~connections~~, beginning potential route sequences with at a gate of one of the close connecting flights connections; and

if there are no close connecting flights ~~connections~~, beginning potential route sequences at a gate of the inbound flight gate.

14. (Currently Amended) The method of claim ~~[[11]]~~1, wherein the most efficient routing route solution comprises a sequence of all of the identified gates of connecting flights to which baggage must be delivered.

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15. (Currently Amended) The method of claim 13, wherein the step of creating the plurality of potential routes ~~possible routing solutions~~ from combinations of routes further comprises the steps of:

identifying all gates of connecting flights to which baggage must be delivered and each gate's corresponding coordinates;

defining a starting gate of the route sequence at a last one of the close connecting flights ~~connection gates~~, or if no close connecting flights, at the inbound flight gate;

adding identified gates within the same zone as the starting gate to the routing solution;

adding the remaining identified gates; and

repeating the foregoing steps for various sequences of identified gates to create the possible routing solutions.

16. (Currently Amended) The method of claim 11, wherein the step of calculating the total distances for each of the ~~combinations~~ potential ~~potential~~ ~~[[of]]~~ routes is based upon coordinates assigned to each gate.

17. (Currently Amended) The method of claim 1, wherein the plurality of clients receiving the ~~selected most efficient assignment and most efficient route assignments and routes~~ from the server over a wireless network are tug clients mounted on tugs operated by baggage handlers.

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18. (Currently Amended) The method of claim 1, wherein the step of delivering baggage according to the ~~selected assignments~~ most efficient assignment and most efficient route ~~routes~~ comprises the steps of:

completing the most efficient assignment ~~assignments~~ by baggage handlers according to the most efficient route ~~routes~~;

notifying the software module on the server computer via tug clients when baggage handlers have completed the most efficient assignment ~~assignments~~; and

sending a new most efficient assignment ~~assignments~~ and a new most efficient route ~~routes~~ from the server computer to the tug clients over the wireless network at the dispatch client's direction.

19. (Currently Amended) The method of claim 18, wherein the step of delivering baggage according to the ~~selected assignments~~ most efficient assignment and most efficient route ~~routes~~ further comprises the steps of:

sending updated flight data to the software module; and

notifying tug clients of updated flight data.

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20. (Currently Amended) A method for supporting the efficient transfer of items from an inbound conveyance to at least one outbound conveyance, comprising the steps of:

- identifying the inbound conveyance;
- retrieving item data describing the destination of the items on the inbound conveyance;
- formulating a plurality of costs of potential assignments for transferring the items from the item data in order to select ~~[[an]] a most efficient assignment solution of assignments;~~
- formulating a plurality of potential routes for completing the most efficient assignment assignments from the item data in order to select ~~[[an]] a most efficient route;~~ and
- transferring the items from the inbound conveyance to the outbound conveyance according to the ~~selected-most efficient assignment assignments and most efficient route-routes.~~

21. (Currently Amended) The method of claim 20, wherein the step of identifying the inbound conveyance comprises the step of notifying a dispatcher responsible for managing the transfer of items that the inbound conveyance is approaching.

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22. (Currently Amended) The method of claim 20, wherein the step of formulating ~~the plurality of costs various combinations~~ of potential assignments for transferring the items comprises the steps of:

defining desired parameters for determining ~~[[an]] the most efficient assignment; and~~
creating the plurality of costs of potential assignments ~~possible assignment solutions from~~
combinations of assignments for transferring items; ~~and~~
~~calculating a cost for each assignment solution.~~

23. (Currently Amended) The method of claim 20, wherein the step of formulating ~~various combinations~~ a plurality of potential routes for completing the assignments comprises the steps of:

creating a plurality of potential routes ~~possible routing solutions~~ from combinations of routes; and
calculating the total distances for each of the ~~combinations~~ plurality of potential routes.

24. (Currently Amended) The method of claim 23, wherein the step of calculating the total distances for each of the ~~combinations~~ plurality of potential routes is based upon coordinates assigned to each stop on the route.

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25. (Currently Amended) The method of claim 20, wherein the step of transferring the items from the inbound conveyance to the outbound conveyance according to the ~~selected~~ most efficient assignment assignments and most efficient route routes comprises the steps of:
distributing the ~~selected~~ most efficient assignment assignments and most efficient route routes that direct how the items are to be transferred;
completing the ~~selected~~ most efficient assignment assignments according to the most efficient route routes; and
distributing a new most efficient assignment assignments and a new most efficient route routes for the transfer of items from a new inbound conveyance.

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26. (Currently Amended) A ~~distributed computer network system~~ for supporting the transfer of baggage from inbound conveyances to connecting conveyances comprising

a central computer system comprising a plurality of databases operable for managing traveler processes and transmitting passenger data, baggage data, and flight data ~~to a server computer,~~

~~[[the]]~~ a server computer connected to the central computer system operating comprising an electronic dispatch software module ~~for~~ configured to calculating calculate a plurality of potential baggage assignments and routes based on the passenger data, baggage data, and flight data;

at least one tug client ~~coupled to the server computer~~ and operable for receiving baggage assignments and routes from the server computer via a wireless network ~~[[and]]~~ presenting baggage assignments and routes to a baggage handler, and transmitting messages to the server computer via the wireless network; and

at least one dispatch client ~~coupled to the server computer~~ and operable for receiving assignments and routes from the server computer via the wireless network and distributing them to the tug clients via the server computer via the wireless network.

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27. (Currently Amended) The ~~distributed computer network system~~ of claim 26, further comprising:
a passenger information distribution system connected to the server computer and operable for transmitting passenger and baggage data to the server computer;
a flight performance evaluation system connected to the server computer and operable for transmitting flight data to the server computer; and
the electronic dispatch software module~~[[:]]~~, wherein the electronic dispatch software module is operable configured to manipulate the passenger, baggage, and flight data to generate assignment and routing solutions a plurality of potential assignments and routes.

28. (Currently Amended) The ~~distributed computer network system~~ of claim 26, further comprising~~[[:]]~~ a flight information display system operable for notifying a dispatch client of inbound flight information.

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